

CL1747 USNA.txt  
SEQUENCE LISTING

<110> DiCosimo, Deana J.  
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Ye, Rick  
Picataggio, Stephen  
Wang, Tao  
Seip, John E.

<120> NATURAL PROMOTERS FOR GENE EXPRESSION IN C1 METABOLIZING BACTERIA

<130> CL1747 US NA

<150> 60/419,872  
<151> 2002-10-21

<160> 26

<170> PatentIn version 3.2

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## CL1747 USNA.txt

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 35 40 45

Leu Thr Asp Met Ala Pro Leu Ala Val Ala Ala Glu Lys Gly Phe Phe  
 50 55 60

Glu Asp Glu Gly Leu Phe Val Gln Leu Glu Ala Gln Ala Asn Trp Lys  
 65 70 75 80

Val Val Met Asp Arg Val Val Asn Gly Glu Leu Asp Gly Ser His Met  
 85 90 95

Leu Ala Pro Ala Pro Leu Ala Ala Ser Val Gly Phe Gly Thr Lys Ala  
 100 105 110

Asp Ile Glu Val Pro Phe Ser Met Gly Phe Asn Gly Asn Ala Ile Thr  
 115 120 125

Val Ser Asn Glu Ile Trp His Gln Met Lys Pro Asn Ile Pro Leu Glu  
 130 135 140

Gly Gly Lys Pro Val His Pro Ile Lys Ala Asp Tyr Leu Lys Pro Val  
 145 150 155 160

Val Glu Lys Tyr Lys Ala Glu Gly Lys Pro Phe Asn Met Ala Met Thr  
 165 170 175

Phe Pro Ala Gly Ser His Asn Ile Lys Leu Arg Tyr Trp Leu Ala Ala  
 180 185 190

Gly Gly Ile Asn Pro Gly Tyr Tyr Ser Pro Pro Gln Asp Ile Ser Gly  
 195 200 205

Gln Ile Gly Ala Asp Ala Leu Leu Ser Val Thr Pro Pro Pro Gln Met  
 Page 2

210

215

220

Pro Ser Thr Leu Glu Ala Gly Thr Ile Phe Gly Tyr Cys Val Gly Glu  
 225 230 235 240

Pro Trp Asn Gln Gln Ala Val Phe Lys Gly Ile Gly Val Pro Val Ile  
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Thr Asp Glu Glu Leu Trp Lys Asp Thr Pro Glu Lys Val Phe Gly Val  
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Thr Lys Gln Trp Ala Glu Lys Tyr Pro Asn Thr Tyr Leu Ala Val Thr  
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Lys Ala Leu Ile Arg Ala Ala Ile Trp Leu Asp Ala Asp Asn Asn Lys  
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Asn Arg Lys Glu Ala Ile Glu Met Leu Ala Gln Lys Gln Tyr Val Gly  
 305 310 315 320

Ala Asp Val Glu Val Leu Ala Ala Ser Met Asn Gly Thr Phe Glu Tyr  
 325 330 335

Glu Lys Asp Asp Lys Arg Ala Leu Pro Asp Phe Asn Thr Phe Phe Arg  
 340 345 350

His Gly Ala Ser Tyr Pro Ser Tyr Ser Ser Ala Val Trp Tyr Leu Thr  
 355 360 365

Gln Leu Arg Arg Trp Gly Met Ile Asn Glu Phe Lys Pro Asp Asn Trp  
 370 375 380

Tyr Leu Asp Thr Ala Lys Asn Val Tyr Arg Pro Asp Ile Tyr Leu Ala  
 385 390 395 400

Ala Ala Lys Glu Leu Val Ala Glu Gly Lys Ala Lys Ala Glu Asp Phe  
 405 410 415

Pro Ala Asp Thr Ser Ile Lys Pro Ser Gln Asn Phe Phe Ile Asp Lys  
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&lt;211&gt; 551

&lt;212&gt; DNA

&lt;213&gt; Methylobionas sp. 16a

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 gtgcggaggg agaaggcact gttttgactc atccaacaga ggatgaggac gcacaatgcg 240  
 gaagtatttt ttgactgaat tattagtatc aatcagcact ccatcgtagg agtctgaatt 300  
 ttcgctcacg ggtgagcaaa tcggacgaag gcgtctgtcg tgcattgctt ttggcaatga 360  
 cacgcggacg ccttttttat tttccgccgt ttttgtttgg aactagtcac gaaaaccatc 420  
 attagatcga gctcgaagaa attgttattg acgttatcgg cttcgctagc cgtttggggt 480  
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 gggcataccg aactctatcg aggtgccgag tacgtagtcg atttcttgcc caaggccaaa 180  
 atcgaagtgg cgggtggggga tgccttggtc gagcaggcgg tagagtccat cgtcaagggtg 240  
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 35 40 45  
 Ala Glu Tyr Val Val Asp Phe Leu Pro Lys Ala Lys Ile Glu Val Ala  
 50 55 60

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Val Gly Asp Ala Leu Val Glu Gln Ala Val Glu Ser Ile Val Lys Val  
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Ala Asn Thr Gly Lys Ile Gly Asp Gly Lys Ile Phe Val Thr Asn Leu  
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ttaatcccgt gcctgcgcaa aaagggcggt accaaaatga agcgccgtgc gccaagttgg 300  
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tgtgttggca tgtaacgtgc ttattcgtc gtgaagttaa tgacaagtcg ttttggggga 420  
attaaccatg agaggtatca atttatgaaa ctcataacag cagttgtaaa gccattcaag 480  
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gatctgttga atagcctgac tctcaaattg atttataccc tggaaacgca cgttcattgcg 180  
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20      25      30

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Ala Ser Glu Leu Asp Asp Tyr Ile Asp Leu Leu Asn Ser Leu Thr Leu
35      40      45

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Lys Leu Ile Tyr Thr Leu Glu Thr His Val His Ala Asp His Ile Thr
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Gly Asp Ala Gly Gln Leu Tyr Asp Ser Ile Thr Gly Lys Leu Phe Thr
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Leu Pro Pro Asp Thr Leu Val Tyr Pro Gly His Asp Tyr Asn Gly Asn
165     170     175

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Gly Gly Lys Ser Arg Glu Glu Phe Ile Ala Ile Leu Gln Asp Leu Lys
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<213> Methylobionas sp. 16a

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## CL1747 USNA.txt

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caagacgaca cccgcttcgc cgacattagt cacatcctgt tcgatcaggc catcctcagc   1860
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<211> 644
<212> PRT
<213> Methylobionas sp. 16a

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<400> 11
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Lys His Leu Leu His Leu Met Ile His Ser Leu Tyr Ser Asn Lys Glu
20          25          30

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```

Ile Phe Leu Arg Glu Leu Ile Ser Asn Ala Ser Asp Ala Ala Asp Lys
35          40          45

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```

Leu Arg Phe Glu Ala Leu Ala Asn Asp Ser Leu Tyr Glu Gly Asp Ser
50          55          60

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## CL1747 USNA.txt

Glu Leu Lys Ile Arg Val Asp Phe Asp Glu Ala Lys Lys Thr Ile Thr  
 65 70 75 80  
 Ile Thr Asp Asn Gly Ile Gly Met Ser Arg Glu Glu Val Gln Asp His  
 85 90 95  
 Ile Gly Thr Ile Ala Lys Ser Gly Thr Lys Gln Phe Phe Glu Lys Leu  
 100 105 110  
 Thr Gly Asp Gln Ala Lys Asp Ser Glu Leu Ile Gly Gln Phe Gly Val  
 115 120 125  
 Gly Phe Tyr Ser Ala Phe Ile Val Ala Asp Lys Val Thr Leu Thr Thr  
 130 135 140  
 Arg Lys Ala Gly Ala Pro His Asp Gln Gly Val Arg Trp Glu Ser Asp  
 145 150 155 160  
 Gly Leu Gly Glu Tyr Ser Ile Glu Thr Val Glu Lys Ala Gly Arg Gly  
 165 170 175  
 Thr Glu Ile Val Leu His Leu Lys Glu Gly Glu Asp Asp Phe Leu Ser  
 180 185 190  
 Ser Trp Lys Leu Arg Ser Ile Ile Lys Lys Tyr Ser Asp His Ile Ser  
 195 200 205  
 Leu Pro Ile Ile Met Ser Lys Glu Ile Pro Ala Glu Lys Asp Asp Asp  
 210 215 220  
 Gly Asn Glu Thr Ala Pro Ala Arg Val Glu Asp Glu Thr Val Asn Ser  
 225 230 235 240  
 Ala Ser Ala Leu Trp Thr Lys Ser Lys Asp Asp Ile Ser Ala Glu Gln  
 245 250 255  
 Tyr Asn Glu Phe Tyr Lys His Val Ala His Asp Phe Gln Asp Pro Leu  
 260 265 270  
 Val His Val His Ser Lys Val Glu Gly Thr Asn Glu Tyr Thr Leu Leu  
 275 280 285  
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 Lys His Gly Val Lys Leu Tyr Ile Lys Lys Val Phe Ile Thr Asp Asp  
 305 310 315 320  
 Ala Glu Gln Leu Met Pro Arg Tyr Leu Arg Phe Val Arg Gly Ile Val  
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 355 360 365  
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 370 375 380  
 Phe Trp Glu Gln Phe Gly Asn Val Ile Lys Glu Gly Pro Ile Glu Asp  
 385 390 395 400  
 His Lys Asn Lys Asp Arg Ile Ala Asn Leu Leu Arg Phe Ser Ser Thr  
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 Arg Met Lys Glu Gly Gln Asn Lys Ile Tyr Phe Ile Thr Ala Asp Ser  
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 Tyr Ala Ala Ala Lys Asn Ser Pro His Leu Glu Val Phe Arg Lys Lys  
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 Gly Leu Glu Val Leu Leu Leu Thr Asp Arg Ile Asp Glu Trp Leu Val  
 465 470 475 480  
 Ser Ser Leu Thr Glu Phe Asp Gly Lys His Met Gln Ser Ile Ala Lys  
 485 490 495  
 Gly Glu Leu Asp Leu Asp Lys Phe Asp Ser Glu Glu Glu Lys Lys His  
 500 505 510  
 Gln Glu Glu Val Ser Lys Asp Phe Glu Ser Val Val Lys Gln Ile Gln  
 515 520 525  
 Glu Val Leu Lys Asp Lys Val Ser Glu Val Lys Ile Ser His Arg Leu  
 530 535 540  
 Thr Asp Ser Pro Ala Cys Leu Val Thr Gly Ala Tyr Asp Met Ser Leu  
 545 550 555 560  
 His Met Glu Arg Ile Met Lys Glu Ala Gly His Ala Met Asn Met Met  
 565 570 575  
 Gly Met Gly Gly Ser Lys Pro Ile Phe Glu Ile Asn Pro Asp His Ala  
 580 585 590  
 Ile Val Gln Ala Leu Lys Asn Glu Gln Asp Asp Thr Arg Phe Ala Asp  
 595 600 605

Ile Ser His Ile Leu Phe Asp Gln Ala Ile Leu Ser Glu Gly Gly Gln  
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Gly Leu Leu Lys

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&lt;212&gt; PRT

&lt;213&gt; Methylomonas sp. 16a

&lt;400&gt; 14

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 20 25 30

Asp Leu Arg Ile Val Gly Lys Thr Ala Ala Leu Leu Ala Gly Gly Leu  
 35 40 45

Leu Ser Val Ala Gln Pro Ala Ser Ala Asn Lys Glu Leu Glu Gln Leu  
 50 55 60

Ser Lys Gln Asn Thr Asn Trp Val Met Gln Thr Lys Asp Tyr Ala Ser  
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Thr His Phe Ser Glu Met Ile Asp Ile  
 85

&lt;210&gt; 15

&lt;211&gt; 696

&lt;212&gt; DNA

&lt;213&gt; Methylomonas sp. 16a

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (501)..(503)

&lt;223&gt; ATG start site of methanol dehydrogenase (moxF) gene

&lt;400&gt; 15

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 gggcaattgc tttgaataga gttggcaagc ggtctcgcca cgatcggctt catagatctc 120  
 gccgatacga tccgacagcg atagataggt cttgtagccg gtacgaacca cggcgtgatc 180  
 atctaccaat aaaacgctga ttttactcgc cactggaaaa tttcctcctc aggtcgtcaa 240  
 gggataaaga tatgggacaa gtccagtctg atgccaggcg gacttggtgt gccttttttt 300  
 atgatgacgc tttatccgtg cttaaaccat gggagctttt cccgtttcca atttcgatcc 360  
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 tgttccgtaa cgttagccag cccggcttct ataacatttg cgccagcgtg gcctggtggt 480  
 cggtaacccg tgatgcggtt atgatcaaca aagctggttt tcaacgacta attctgatct 540  
 tcaggctcgc cctcacttat agcgataaaa atcctggagg aaacatgcaa caactcgatt 600  
 tgcgcatagt cgggaaaacc gcggccttgt tggctggtgg ctttctgagc gtggcgcaac 660  
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&lt;210&gt; 16

&lt;211&gt; 645

## CL1747 USNA.txt

&lt;212&gt; DNA

&lt;213&gt; Methylomonas sp. 16a

&lt;400&gt; 16

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tacaacggta tcaacctggt taaagcggtg agagaacggt accctgacaa actggttgctg    180
gttgacctga aaaccatgga cgctggcgaa tacgaagccg gtgcattcta tgccgctggt    240
gccgacatct gcaccgtatt ggggtgtgtct ggtctggcta ccatcggtgg cgtcatcaag    300
gctgcgaaaa aacacgcggc cgaagttcaa gttgacctga tcaacgtgcc gaacaaagca    360
gagtgcgcac gcgaatctgc aaaattgggc gcgcaaataca tgggcgttca caccggtctg    420
gacgcgcaag ccgcgggtca aacccccattt accgacctga atgaagttgc ctccttgggc    480
ttgaacgttc gtgtttctgt tgctggcggt atcaaacctg cgactattga tcaaaccgtt    540
aaagcggggc caaacatcat cgttgtcggc gcagcgatct acggtgcgcc gtcacctgcc    600
gaagcagcgc gtgaaattcg tgaattggta gaagcagcag cggtg                        645

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&lt;210&gt; 17

&lt;211&gt; 215

&lt;212&gt; PRT

&lt;213&gt; Methylomonas sp. 16a

&lt;400&gt; 17

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Met Ala Arg Pro Leu Ile Gln Met Ala Leu Asp Ser Leu Asp Phe Asp
1           5           10           15

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Gln Thr Val Ala Leu Ala Asp Gln Val Ala Pro Tyr Val Asp Ile Phe
          20           25           30

```

```

Glu Ile Gly Thr Pro Cys Ile Lys Tyr Asn Gly Ile Asn Leu Val Lys
        35           40           45

```

```

Ala Leu Arg Glu Arg Tyr Pro Asp Lys Leu Leu Leu Val Asp Leu Lys
        50           55           60

```

```

Thr Met Asp Ala Gly Glu Tyr Glu Ala Gly Ala Phe Tyr Ala Ala Gly
65           70           75           80

```

```

Ala Asp Ile Cys Thr Val Leu Gly Val Ser Gly Leu Ala Thr Ile Gly
          85           90           95

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```

Gly Val Ile Lys Ala Ala Lys Lys His Ala Ala Glu Val Gln Val Asp
        100           105           110

```

```

Leu Ile Asn Val Pro Asn Lys Ala Glu Cys Ala Arg Glu Ser Ala Lys
        115           120           125

```

```

Leu Gly Ala Gln Ile Met Gly Val His Thr Gly Leu Asp Ala Gln Ala
        130           135           140

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Ala Gly Gln Thr Pro Phe Thr Asp Leu Asn Glu Val Ala Ser Leu Gly  
145 150 155 160

Leu Asn Val Arg Val Ser Val Ala Gly Gly Ile Lys Pro Ala Thr Ile  
165 170 175

Asp Gln Thr Val Lys Ala Gly Ala Asn Ile Ile Val Val Gly Ala Ala  
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Ile Tyr Gly Ala Pro Ser Pro Ala Glu Ala Ala Arg Glu Ile Arg Glu  
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Leu Val Glu Ala Ala Ala Val  
210 215

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<220>  
<221> misc\_feature  
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aacccttcag gccaatgaaa aagacattcg cttcacggat gatttgagcg ataagtcatc 180  
cgcggaaaaa ggtgcggtag ctgtggataa aaaaggcgcc agatagtaag cgctaaggat 240  
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<210> 20  
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<400> 20

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<210> 21  
 <211> 22  
 <212> DNA  
 <213> Methylomonas sp. 16a

<400> 21  
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<210> 22  
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<400> 22  
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<210> 23  
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<400> 23  
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<400> 24  
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<210> 25  
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 <212> DNA  
 <213> Pantoea stweartii

<400> 25  
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<210> 26  
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<400> 26  
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